PBAF 518: Applied Benefit-Cost Analysis

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Class meets: Thursday, 12:30-3:30 in Savery 137
Office Hours: Friday 2:30-4 PM and by appointment.

Course Website: https://canvas.uw.edu/courses/1043084.
Course listserv: pbaf518a_sp16@uw.edu

Course Description and Objectives

According to the Center for Benefit-Cost Analysis at the Evans School: “Benefit-cost analysis (BCA), also known as cost-benefit analysis, aims to inform the decision-making process with specific types of information, namely measures in monetary terms of willingness to pay for a change by those who will benefit from it, and the willingness to accept the change by those who will lose from it…The use of monetary terms provides a common metric. Its purpose is not to price everything, but rather to order choices in a way that is informative about social choices for decision makers.”

BCA is most useful as a tool for public decision-making, and is widely used by various levels of governments. In fact, many types of policies and investments at the Federal level are required to undergo a BCA. As such, BCA is an important (and marketable!) skill for those entering the public sector. You will almost certainly be a consumer of a BCA at some point in your professional life, and you may even be asked to conduct or contribute to one. This class will prepare you in the art and science of BCA as both a consumer and producer. There is far too much material to cover in 10 weeks, but the course should provide you with most of the necessary fundamentals.

Textbook

The only required textbook is "Cost-Benefit Analysis: Concepts and Practice" by Anthony Boardman, David Greenberg, Aidan Vining, and David Weimer. I recommend using the most recent (4th, 2011) edition, but the 3rd edition should work fine as well. The textbook should be available at the UW bookstore before the first class and can be purchased from Amazon at: http://www.amazon.com/Cost-Benefit-Analysis-Edition-Pearson-Economics/dp/0137002696/

Homework Assignments

There will be three homework assignments. These are intended to help you apply the concepts in class, build practical skills, and move you along on your class project (see below). You are free to work in groups, although you must turn in your own work. Homework assignments will be graded solely for completeness – please make it easy for me to identify that you have
completed all portions of the homework. Show your work and try all problems. Some problems will require use of a spreadsheet program like Excel.

Assignments are due before class and should be submitted using the Canvas site as a pdf. If you have a serious health issue, please let me know with documentation from your doctor that this issue prevented completion of an assignment. Other personal commitments (e.g., work, travel) will not be accepted as excuses for late completion of assignments.

**Midterm Exam**

The midterm exam is intended to gauge your familiarity with the foundational concepts covered in roughly the first half of the class. The exam will be open-book and open-notes. The exam will be held in class on May 12. **YOU MUST ATTEND CLASS ON THIS DAY.** If you know now that you cannot attend that day, then you should not take this class. The only excuse I will accept is a serious health issue with documentation from your doctor that this issue prevented your taking the midterm on time.

**Project**

To further apply your skills, you will be required to conduct a portion of a full BCA. This is an individual assignment (i.e., not a group project), but it is expected that you will get help from your classmates. Because BCA is applied in a wide variety of fields, and because I expect your interests will vary, this is also an opportunity for you to explore some of the issues in BCA in your particular topical area of interest (i.e. education, crime, health, water policy, etc.).

You should identify your topic as soon as possible. Potential topics might include current public policy proposals or public infrastructure investments (i.e. new stadium, transportation (i.e. replace Viaduct), communications (citywide wireless), or others).

Conducting a full BCA in the midst of a 10-week quarter is too much to expect, especially for individual work. So, what I am expecting is the following:

- A statement of the policy problem that is being analyzed.
- A full accounting of the various likely impacts of the policy and the units in which these impacts would be measured.
- A quantitative estimate of the magnitude of one of these impacts.
- A monetization of this one impact.
- A sketch of what would be needed to complete the BCA.

Finding data may be difficult. Choosing a current and local topic might be helpful in that you can contact a local agency for help with assumptions or data. Your analyses will most likely be ex ante, though you are free to do an ex post analysis.

You will present your work twice to members of the class. See schedule below. Your final written report is due Monday, June 6th at 11:59PM. Each day late will receive a 0.2 point deduction (e.g., 5 days late would reduce your grade from a perfect 4.0 to a 3.0, or from a 3.4 to
2.4, etc.). Written reports should be no longer than 4 written pages (single-spaced, 12 point font for text and footnotes). Pages for tables, figures, and references should be appended after the 4 pages of text. Papers should be submitted as a PDF.

**Grading and Requirements**

The course requirements include three homework assignments, one in-class exam, and an independent research project which you will present to the class twice and write a short paper. The purpose of the in-class exam is to help diagnose your progress in learning the mechanics and interpretation of BCA. *(The in-class exam will be closed book, but you will be allowed to use 2 pages (4 sides) of notes.)*

Homework Assignments (on time and complete for full credit) 20% of final grade
In-class Exam (May 12) 30% of final grade
Presentation of Methods and Data (May 12 and 19) 10% of final grade
Presentation of Results (May 26 and June 2) 10% of final grade
Written Report (due June 6th at 11:59PM) 30% of final grade

**Tips to Do Well in Class**

- **Do the reading before you come to class.** Hearing the material after having read it will help things make sense to you. I plan class exercises and lecture with the assumption that you’ve done the reading.
- **Come with questions** to class. If you do not understand something, ask questions about it in class. Usually, you are not the only one who has the same question.
- **Attend class regularly** and keep up with your assignments.
- A good way of learning statistics is to **discuss the material with someone else.** To that end, I recommend you form a study group with whom you work on problem sets. Set a time regular time to meet. Ask questions among yourselves. Seeing material from the perspectives of others will help you better to formulate your understanding of the material.
Schedule

March 31: Introduction – First 4 Steps:
1. Specify the set of alternative projects
2. Decide whose benefits and costs count (standing)
3. Identify the impact categories, catalogue them, and select measurement indicators
4. Predict the impacts quantitatively over the life of the project

- Readings
  - Boardman, Greenberg, Vining, and Weimer: Chapters 1-5
  - U.S. President's Executive Order 12291
  - Skim WSIPP site's BCAs.

April 7: Monetizing Impacts Using Revealed Preferences
- No class. Thursday – Saturday this week, I will be at the APPAM conference in Washington DC. My lecture will be taped. Watch this at your leisure. You may find it valuable to watch with others and discuss.
- HW1 is due.
- Readings:
  - Boardman, Greenberg, Vining, and Weimer: Chapters 11-14

April 14: Monetizing Impacts Using Stated Preferences
- Readings
  - Boardman, Greenberg, Vining, and Weimer: Chapter 9, 15
  - U.S. Environmental Protection Agency "Guidelines for Economic Analysis. Read 7.3.2 "Stated preference"-7.4 "Benefit Transfer" (pg.7-35 to 7-49)

April 21: Value of Life
- HW2 is due.
- Readings


The Summers Memo

April 28: Discounting

- Readings
  - Boardman, Greenberg, Vining, and Weimer: Chapter 6, 10

May 5: Uncertainty, Sensitivity Analysis, Distributional Concerns, and Review for Exam

- HW3 is due.
- Readings
  - Boardman, Greenberg, Vining, and Weimer: Chapter 7, 19

May 12: Exam & Presentations of Proposed Data and Methods

- 12:30-1:45: In-class midterm exam
- 1:45-2: Break
- 2-3:20 Presentations of Proposed Data and Methods (See below).

May 12 & May 19: Presentations of Proposed Data and Methods

- Prepare a 5-minute presentation of policy you plan to assess with a BCA; a full accounting of the various likely impacts of the policy and the units in which these impacts would be measured; the particular impact you plan to estimate and monetize; and the proposed method and data for this analysis. The intent of this presentation is to get feedback on your proposal before you estimate and monetize.

May 26 & June 2: Presentations of Results

- Prepare a 7-minute presentation that focuses on results (but that also reminds us of your research question(s), method of analysis, and data). The intent of this presentation is to get feedback on your results after you have estimated and monetized, but before you finish writing your report.

June 6: Written reports are due at 11:59 PM.